

Nevada Department of Agriculture West Nile Virus (WNV) Report – 2005

The Nevada Animal Disease Laboratory (NADL) performed all testing of mosquito pools, dead birds and sentinel chicken flocks, and submissions from horses and other companion animals, poultry and wildlife. Samples were submitted for testing by vector control and wildlife agencies, health departments, veterinarians, and residents throughout the state.

Dead Bird Surveillance

During the year 2005, the Nevada Animal Disease Laboratory (NADL) in Reno received 576 dead bird samples for WNV testing from every county in the state except Lincoln, Esmeralda, and Storey counties. All of these samples were also tested for Western Equine Encephalitis Virus (WEE) and the St. Louis Encephalitis Virus (SLE). Out of the 576 submitted samples, 74 were found to be positive for WNV. Of these 74 birds, 33 were corvids, 14 were Pelicans, 2 were raptors, and 26 birds represented other genera. None of the samples were found to be positive for WEE while 1 bird was found to be positive for SLE.

Dead birds, particularly ravens, crows, magpies and other large birds of the Corvidae are usually the first sign of the arrival or reoccurrence of WNV. They are referred to as 'indicator species'. They play an important role in detecting the spread and/or reemergence of the virus. Dead bird submissions from urban areas were restricted after at least two infected birds from the same zip code were submitted. Submissions from rural counties were not restricted and remained sparse throughout arbovirus season 2005. In 2005 the primary focus of surveillance and testing shifted to mosquito pools and dead birds were submitted to a lesser extent. Birds have been and will be accepted for testing at any time if they represented rare or endangered species or are dropped off directly at the laboratory.

Refer to table 1 for the county breakdown of number of positive birds and species.

Table 1

County	Birds Tested for : WNV	WEE	SLE	positive WNV	WEE positive	SLE positive
Carson	19	19	19	10	0	0
Churchill	53	53	53	15	0	0
Clark	194	194	194	5	0	1
Douglas	27	27	27	8	0	0
Elko	23	23	23	4	0	0
Esmeralda	0	0	0	0	0	0
Eureka	15	15	15	0	0	0
Humboldt	37	37	37	6	0	0
Lander	2	2	2	0	0	0
Lincoln	0	0	0	0	0	0
Lyon	37	37	37	5	0	0
Mineral	1	1	1	1	0	0

Nye	15	15	15	0		0	0
Pershing	5	5	5	4		0	0
Storey	0	0	0	0		0	0
Washoe	108	108	108	9		0	0
White							
Pine	17	17	17	0		0	0
Unknown	23	23	23	7		0	0
Totals	576	576	576	74		0	1

Mosquito Pool Surveillance

Mosquito surveillance was conducted in every county throughout the state of Nevada. Mosquitoes were trapped, identified as to species and subspecies, were sorted into pools of fifty or less females of the same subspecies, and then submitted to the NADL for testing. These pools were tested utilizing Quantitative Real Time Polymerase Chain Reaction (qRT-PCR) testing. A total of 2955 mosquito pools were tested for WNV and 151 were found to be positive. All of these pools were also tested for WEE and SLE. All pools were found to be negative for WEE and 2 pools were found to be positive for SLE. Refer to table 2 for the county breakdown of positive pools.

Table 2

County	Pools tested WNV	Pools tested WEE	Pools tested SLE	Positive WNV pools	Positive WEE pools	Positive SLE pools
Carson	5	5	5	0	0	0
Churchill	404	404	404	22	0	2
Clark	877	877	877	25	0	0
Douglas	65	65	65	7	0	0
Elko	49	49	49	7	0	0
Esmeralda	59	59	59	0	0	0
Eureka	18	18	18	0	0	0
Humboldt	38	38	38	0	0	0
Lander	87	87	87	0	0	0
Lincoln	130	130	130	13	0	0
Lyon	485	485	485	25	0	0
Mineral	62	62	62	1	0	0
Nye	302	302	302	19	0	0
Pershing	23	23	23	0	0	0
Storey	6	6	6	1	0	0
Washoe	237	237	237	26	0	0
White						
Pine	86	86	86	5	0	0
Unknown	22	22	22	0	0	0
Totals	2955	2955	2955	151	0	2

Sentinel Chicken Flock Surveillance

Chickens are commonly used as sentinel animals for WNV surveillance. In 2005, the NADL performed ELISA tests, from May till October, on blood samples from 9 different sentinel flocks located throughout the state. Each flock consisted of at least 10 chickens and every bird within a flock had blood drawn every 2 weeks throughout arbovirus season. Prior to placing the sentinel flocks, each bird was tested for WNV antibodies and found to be negative. During 2005 testing, there was 1 sentinel chicken that seroconverted, indicating exposure to the WNV during the surveillance period. This bird was located in White Pine County.

Equine Testing

During the summer and fall of 2005 the NADL tested 126 domestic horses, using an IgM ELISA test, for WNV. A total of 44 domestic horses were found to be positive for WNV within the State of Nevada. Of the 44 positive horses, 7 died or were euthanized. Of these 7 horses, 3 were partially vaccinated. For the purpose of this report the definition of partial vaccination includes horses that were either vaccinated once or twice in 2004 but didn't receive a booster in 2005 or received their first and only vaccination in 2005 or had received their first 2 vaccinations in 2005 but the last inoculation was given 1-21 days prior to the onset of clinical signs which indicates that the horse's immune system may not have had enough time to generate a protective immunity.

The NADL performed WNV IgG ELISA tests on 1423 wild horses. Of these animals, 8 were found to be positive for WNV. All 8 of these horses were captured in the Goshute Wild Horse Management in Elko County. At the time of capture they appeared to have completely recovered. The horses were tested in January 2005, exposure to WNV took place in 2004.

In 2005, equine WNV disease incidence peaked in the month of September with the majority of cases occurring in Pahrump, Nye County. The horse population in the Pahrump area had been completely unvaccinated until this summer. Nye county did not have a mosquito abatement agency until late fall of 2005.

The earliest laboratory confirmed case of WNV in a horse was diagnosed on 7/20/05 and the last laboratory diagnosed case of the season occurred on 11/4/05. Refer to table 3 for the county breakdown of number of tests performed, positive domestic horses, and the number that died or were euthanized.

Table 3

County	WNV tests performed	Positive cases	Died / Euth.
Carson	4	0	0
Churchill	9	2	0

Clark	34	3	1
Douglas	3	0	0
Elko	7	2	0
Esmeralda	0	0	0
Eureka	1	0	0
Humboldt	6	1	0
Lander	0	0	0
Lincoln	1	1	0
Lyon	6	3	1
Mineral	0	0	0
Nye	36	30	3
Pershing	1	0	0
Storey	1	1	0
Washoe	8	1	2
White			0
Pine	1	0	
Unknown	8	0	0
Totals	126	44	7

WNV Testing of Other Species

Three other species of livestock and companion animals, other than horses, were tested using QRT-PCR at the NADL during 2005 (Table 4). Also, 8 water and 2 avian lice samples were tested and found to be negative.

Table 4

Species	# tested	# positive
Bovine	1	0
Caprine	1	0
Rabbits	5	0